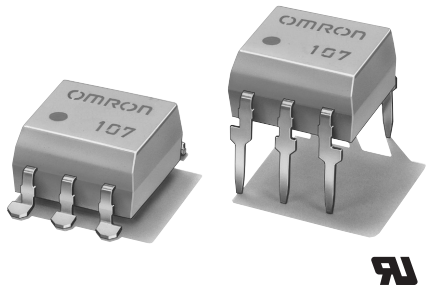
MOS FET Relays
G3VM-401BY/EY

Analog-switching MOS FET Relay with Dielectric Strength of 5 kVAC between I/O Using Optical Isolation.

- Switches minute analog signals.
- Leakage current of 1 μA max. when output relay is open.
- RoHS Compliant.



Note: The actual product is marked differently from the image shown here.

■ Application Examples

- Electronic automatic exchange systems
- Measurement devices
- FA systems

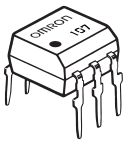
■ List of Models

Contact form	Terminals	Load voltage (peak value)	Model	Number per stick	Number per tape
SPST-NO	PCB terminals	400 VAC	**G3VM-401BY**	50	---
	Surface-mounting terminals		**G3VM-401EY**		
			G3VM-401EY(TR)	---	1,500

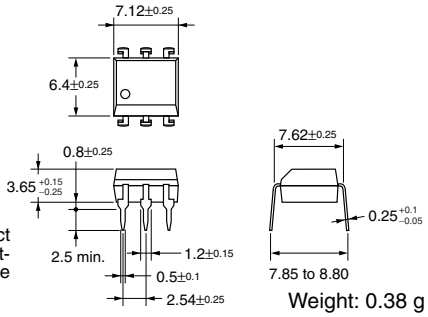
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

G3VM-401BY

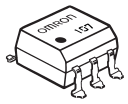


Note: The actual product is marked differently from the image shown here.



Weight: 0.38 g

G3VM-401EY



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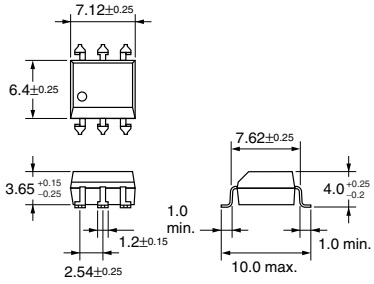
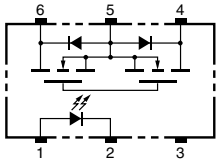


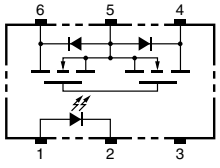
Weight: 0.38 g

■ Terminal Arrangement/Internal Connections (Top View)

G3VM-401BY

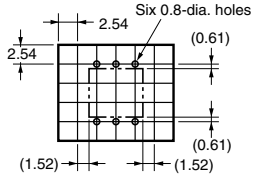


G3VM-401EY



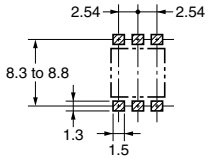
■ PCB Dimensions (Bottom View)

G3VM-401BY



■ Actual Mounting Pad Dimensions (Recommended Value, Top View)

G3VM-401EY

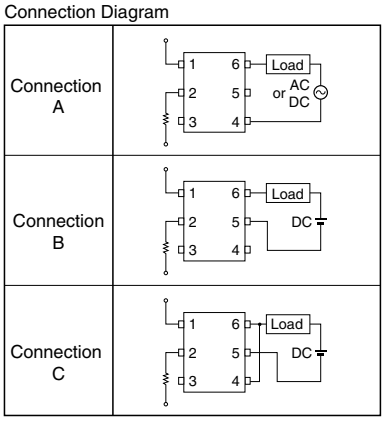


■ Absolute Maximum Ratings (Ta = 25°C)

Item			Symbol	Rating	Unit	Measurement conditions
Input	LED forward current		I_F	50	mA	
	Repetitive peak LED forward current		I_{FP}	1	A	100 μs pulses, 100 pps
	LED forward current reduction rate		ΔI_F/°C	–0.5	mA/°C	Ta ≥ 25°C
	LED reverse voltage		V_R	5	V	
	Connection temperature		T_j	125	°C	
Output	Load voltage (AC peak/DC)		V_{OFF}	400	V	
	Continuous load current	Connection A	I_O	120	mA	
		Connection B		120		
		Connection C		240		
	ON current reduction rate	Connection A	ΔI_{ON}/°C	–1.2	mA/°C	Ta ≥ 25°C
		Connection B		–1.2		
		Connection C		–2.4		
	Connection temperature		T_j	125	°C	
Dielectric strength between input and output (See note 1.)			V_{I-O}	5,000	V_{rms}	AC for 1 min
Operating temperature			T_α	–40 to +85	°C	With no icing or condensation
Storage temperature			T_{stg}	–55 to +125	°C	With no icing or condensation
Soldering temperature (10 s)			---	260	°C	10 s

Note: **1.** The dielectric strength between the input and output was checked by applying voltage between all pins as a group on the LED side and all pins as a group on the light-receiving side.

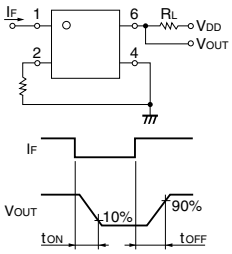
Connection Diagram



■ Electrical Characteristics (Ta = 25°C)

Item			Symbol	Minimum	Typical	Maximum	Unit	Measurement conditions
Input	LED forward voltage		V_F	1.0	1.15	1.3	V	I_F = 10 mA
	Reverse current		I_R	---	---	10	μA	V_R = 5 V
	Capacity between terminals		C_T	---	30	---	pF	V = 0, f = 1 MHz
	Trigger LED forward current		I_{FT}	---	---	3	mA	I_O = 120 mA
Output	Maximum resistance with output ON	Connection A	R_{ON}	---	17	35	Ω	I_F = 5 mA, I_O = 120 mA
		Connection B		---	11	20	Ω	I_F = 5 mA, I_O = 120 mA
		Connection C		---	6	10	Ω	I_F = 5 mA, I_O = 240 mA
	Current leakage when the relay is open		I_{LEAK}	---	0.0004	1.0	μA	V_{OFF} = 400 V
	Capacity between terminals A Connection		C_{OFF}	---	40	---	pF	V = 0, f = 1MHz
Capacity between I/O terminals			C_{I-O}	---	0.8	---	pF	f = 1 MHz, V_s = 0 V
Insulation resistance			R_{I-O}	1,000	---	---	MΩ	V_{I-O} = 500 VDC, R_{oH} ≤ 60%
Turn-ON time			t_{ON}	---	0.3	1.0	ms	I_F = 5 mA, R_L = 200 Ω, V_{DD} = 20 V (See note 2.)
Turn-OFF time			t_{OFF}	---	0.1	1.0	ms	

Note: **2.** Turn-ON and Turn-OFF Times



■ Recommended Operating Conditions

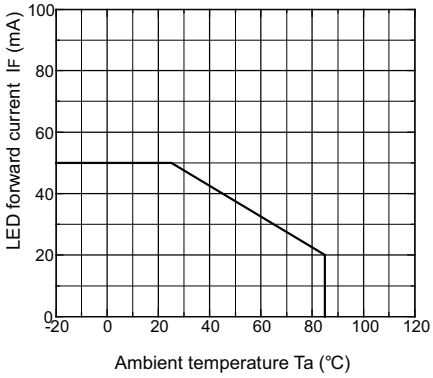
Use the G3VM under the following conditions so that the Relay will operate properly.

Item	Symbol	Minimum	Typical	Maximum	Unit
Load voltage (AC peak/DC)	$V_{\Delta\Delta}$	---	---	320	V
Operating LED forward current	I_Φ	5	7.5	25	mA
Continuous load current (AC peak/DC)	I_O	---	---	120	mA
Operating temperature	T_α	– 20	---	65	°C

■ Engineering Data

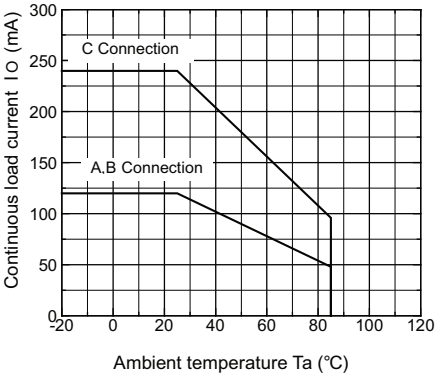
LED forward current vs. Ambient temperature

I_F - Ta



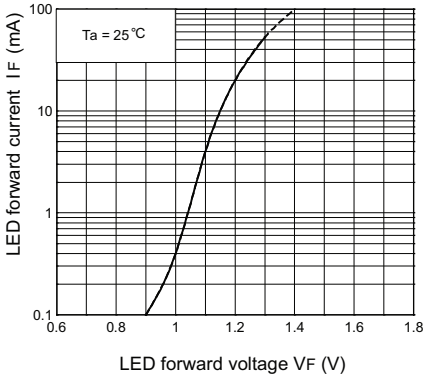
Continuous load current vs. Ambient temperature

I_O - Ta



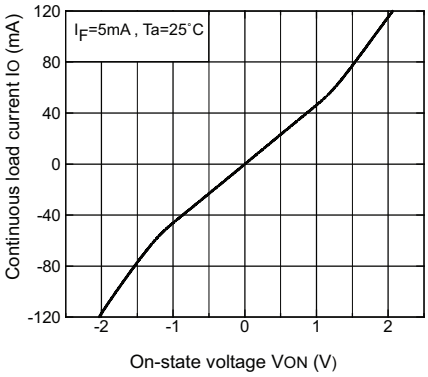
LED forward current vs. LED forward voltage

I_F - V_F



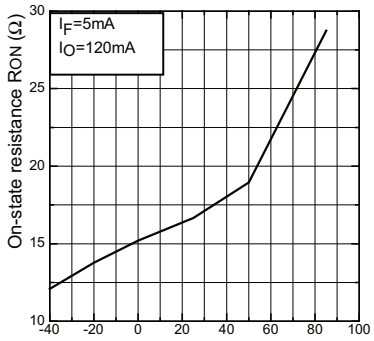
Continuous load current vs. On-state voltage

I_O - V_{ON}



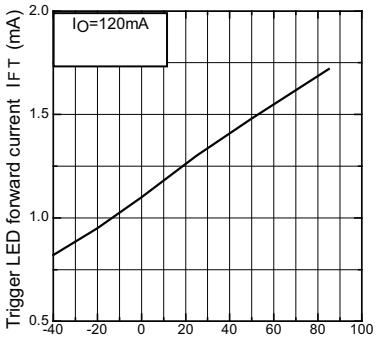
On-state resistance vs. Ambient temperature

R_{ON} - Ta



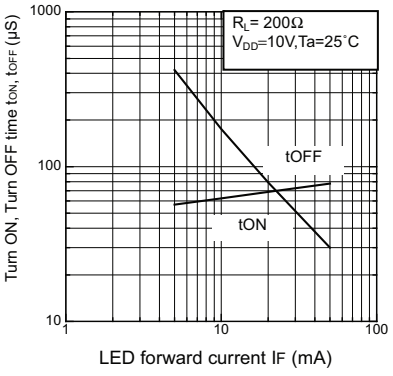
Trigger LED forward current vs. Ambient temperature

I_{FT} - Ta



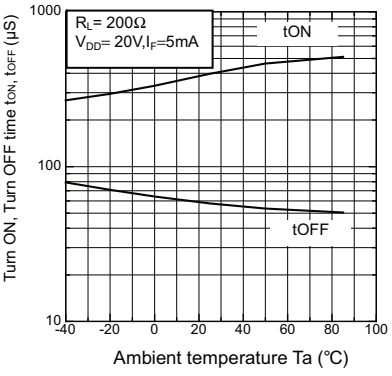
Turn ON, Turn OFF time vs. LED forward current

t_{ON}, t_{OFF} - I_F



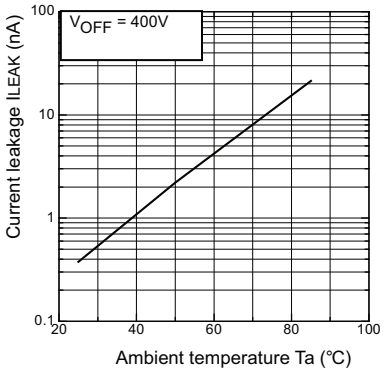
Turn ON, Turn OFF time vs. Ambient temperature

t_{ON}, t_{OFF} - Ta



Current leakage vs. Ambient temperature

I_{LEAK} - Ta



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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